

REMARKS

In view of the above amendments, and the following remarks, Applicants request favorable reconsideration of the above-identified application.

Claims 29-34 are now pending in this application, with Claims 29 and 32 being independent. By this Amendment, Applicants have amended Claim 29, added new Claims 32-34, and canceled Claims 24, 28, 30, and 31.

Claims 24 and 28 stand rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over Claim 7 of U.S. Patent No. 6,731,431 (Sekine) in view of U.S. Patent No. 6,157,488 (Ishii). While not conceding the properness of this rejection, Applicants have canceled Claims 24 and 28, rendering the issue moot. Accordingly, Applicant request withdrawal of the double patenting rejection.

Claims 29 and 30 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,772,905 (Chou) in view of Ishii. Applicants traverse this rejection.

As recited in independent Claim 29, Applicants' invention is directed to a method of manufacturing an optical element by forming a second diffraction grating on a first diffraction grating, through molding. The method involves aligning a mold to be used for the molding of the second diffraction grating, by engaging a recess alignment mark provided on the mold with a protrusion alignment mark provided on a substrate of the first diffraction grating.

Independent Claim 32 is directed to a method similar to that recited in independent Claim 29; however, in independent Claim 32, the recess alignment mark is provided on the substrate and the protrusion alignment mark is provided on the mold.

Thus, in the present invention, a mold is aligned with an already-formed diffraction grating using alignment marks which physically engage each other, in the process of forming another diffraction grating on the already-formed diffraction grating.

Chou is directed to a lithographic method for creating ultra-fine patterns. That patent states that a mold is used to create a recess in a thin film. As discussed in the Office Action, Chou describes the use of alignment marks provided on a mold and on a substrate, respectively. While the alignment marks are used to align a substrate and mold, Applicants note that the described alignment methods include (i) an optical alignment method based on detecting moiré (interference fringe) formed by light passing through the alignment marks, and (ii) an alignment method based on capacitance between the alignment marks. That patent is silent as to a mold and a substrate which have recesses and protrusions which physically engage each other to align such devices. Further, that patent does not describe the formation of a second diffraction grating on a first diffraction grating using such physically-engaging alignment marks.

Ishii is directed to a diffractive optical element in which multiple diffraction gratings are stacked together. That patent is merely cited in the Office Action as describing that a first periodic structure is formed on a second periodic structure. While Ishii does describe stacked periodic structures, Applicants submit that Ishii does not suggest or describe any recesses or protrusions used as alignment marks for aligning a mold with a diffraction grating (or substrate thereof) which has already been formed.

Accordingly, Applicants submit that Chou and Ishii, taken alone or in combination, fail to disclose or suggest at least the features of forming on a first diffraction grating, a

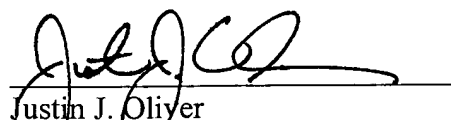
second diffraction grating by molding, and performing alignment of a mold to be used for the molding of the second diffraction grating, by engaging a recess/protrusion alignment mark provided on the mold for the second diffraction grating with a protrusion/recess alignment mark provided on a substrate on which the first diffraction grating is formed, as recited in independent Claims 29 and 32.

The remaining claims in the present application are dependent claims which depend from the above-discussed independent claims, and thus are patentable over the applied patents for reasons noted above with respect to those independent claims. In addition, each recites features of the invention still further distinguishing it from the applied patents. Applicants request favorable and independent consideration thereof.

For the foregoing reasons, Applicants request withdrawal of the outstanding rejection under 35 U.S.C. § 103, and allowance of this application.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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